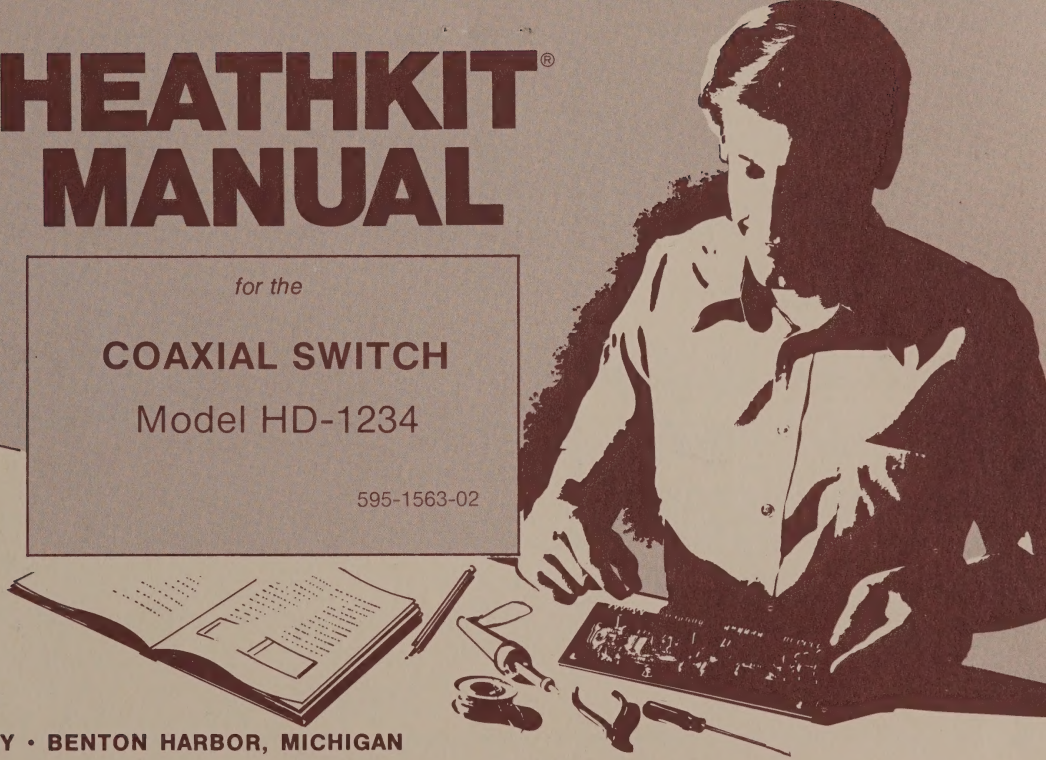
HEATHKIT® MANUAL

for the

COAXIAL SWITCH

Model HD-1234

595-1563-02



HEATH COMPANY • BENTON HARBOR, MICHIGAN

YOUR HEATHKIT 90-DAY FULL WARRANTY

If you are not satisfied with our service - warranty or otherwise - or with our products, write directly to our Director of Customer Services, Heath Company, Benton Harbor, Michigan 49022. He will make certain your problems receive immediate, personal attention.

Our attorney, who happens to be quite a kitbuilder himself, insists that we describe our warranty using all the necessary legal phrases in order to comply with the new warranty regulations. Fine, Here they are:

For a period of ninety (90) days after purchase, Heath Company will replace or repair free of charge any parts that are defective either in materials or workmanship. You can obtain parts directly from Heath Company by writing us at the address below or by telephoning us at (616) 982-3571. And we'll pay shipping charges to get those parts to you — anywhere in the world.

We warrant that during the first ninety (90) days after purchase, our products, when correctly assembled, calibrated, adjusted and used in accordance with our printed instructions, will meet published specifications.

If a defective part or error in design has caused your Heathkit product to malfunction during the warranty period through no fault of yours, we will service it free upon proof of purchase and delivery at your expense to the Heath factory, any Heathkit Electronic Center (units of Schlumberger Products Corporation), or any of our authorized overseas distributors.

You will receive free consultation on any problem you might encounter in the assembly or use of your Heathkit product. Just drop us a line or give us a call. Sorry, we cannot accept collect calls.

Our warranty does not cover and we are not responsible for damage caused by the use of corrosive solder, defective tools, incorrect assembly, misuse, fire, or by unauthorized modifications to or uses of our products for purposes other than as advertised. Our warranty does not include reimbursement for customer assembly or set-up time.

This warranty covers only Heathkit products and is not extended to allied equipment or components used in conjunction with our products. We are not responsible for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

HEATH COMPANY
BENTON HARBOR, MI. 49022

HEATH COMPANY PHONE DIRECTORY

The following telephone numbers are direct lines to the departments listed:

Kit orders and delivery information	(616) 982-3411
Credit	(616) 982-3561
Replacement Parts	(616) 982-3571
Technical Assistance:	
R/C, Audio, and Electronic Organs	(616) 982-3310
Amateur Radio	(616) 982-3296
Test Equipment, Strobe Lights, Calculators, Clocks, Weather Instruments	(616) 982-3315
Television	(616) 982-3307
Automotive, Marine, Appliances, Security, General Products	(616) 982-3496

Prices and specifications subject to change without notice.

Price $2.00

Assembly and Operation of the

COAXIAL SWITCH

MODEL HD-1234

TABLE OF CONTENTS

Introduction	1
Parts List	2
Step-by-Step Assembly	4
Installation and Applications	9
In Case of Difficulty	13
Specifications	14
Warranty	Inside front cover
Customer Service	Inside rear cover

INTRODUCTION

The Model HD-1234 Coaxial Switch is designed to switch one RF source or receiver to any one of several antennas or RF loads, while grounding the unused connectors.

The Coaxial Switch can be used in conjunction with the Heathkit RF Load Wattmeter for off-the-air tuneup, and can then be immediately switched to an antenna for normal transmission and reception.

A mounting bracket is provided to permit you to conveniently hang the switch on the side of an equipment enclosure, onto a desk, or on a wall. The switch may be used handily without the mounting bracket in any application which suits the needs of your transmission system.

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

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PARTS LIST

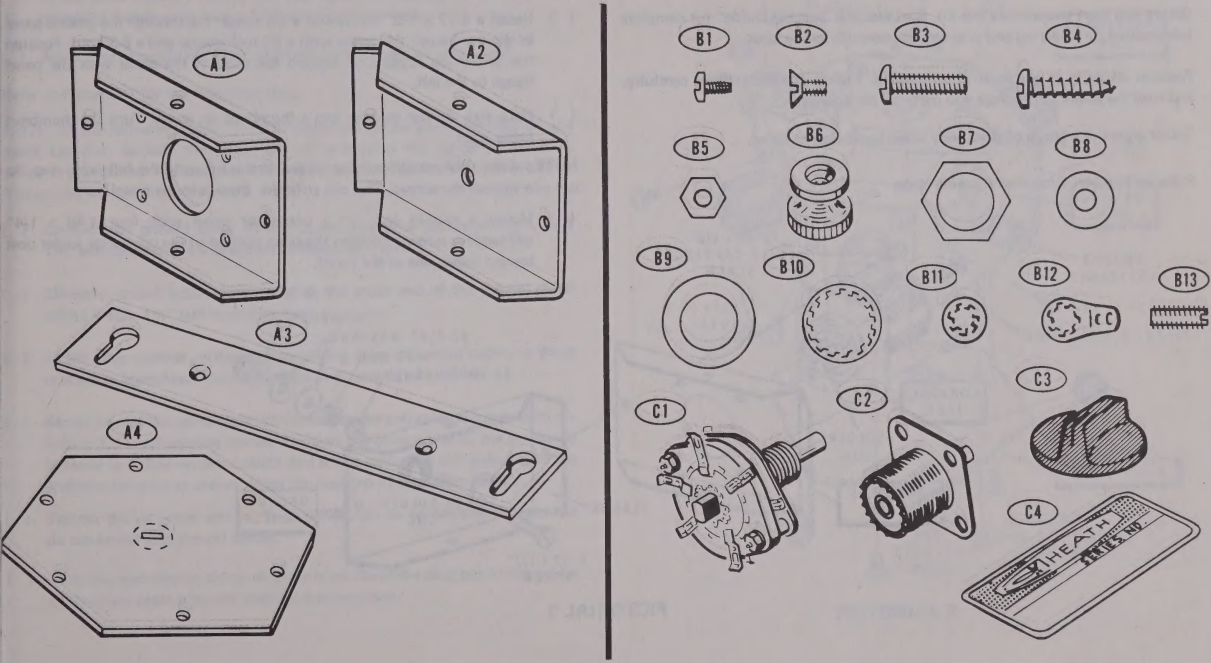
Unpack all the parts in the kit and check each part against the following list. The key numbers correspond to numbers on the Parts Pictorial.

KEY No.	PART No.	PARTS Per Kit	DESCRIPTION	PRICE Each
METAL PARTS				
A1	203-1519	5	Connector panel	.25
A2	203-1520	1	Ground panel	.45
A3	204-1923	1	Mounting bracket	.90
A4	205-1437	2	Cover plate	.70
HARDWARE				
B1	250-1184	38	4-40 x 1/4" self-tapping screw	.05
B2	250-428	2	4-40 x 1/4" flat head screw	.05
B3	250-234	1	6-32 x 1/2" screw	.05
B4	250-12	2	#6 x 5/8" sheet metal screw	.05
B5	252-77	1	6-32 nut	.05
B6	252-23	1	Thumbnut	.05
B7	252-7	1	Control nut	.05
B8	253-60	2	#6 flat washer	.05
B9	253-10	1	Control flat washer	.05
B10	254-5	1	Control lockwasher	.05
B11	254-25	1	#6 lockwasher	.05
B12	259-1	1	#6 solder lug	.05
B13	250-1193	1	8-32 x 3/8" setscrew	.05

KEY No.	PART No.	PARTS Per Kit	DESCRIPTION	PRICE Each
MISCELLANEOUS				
C1	63-683	1	Rotary switch	4.30
C2	436-5	5	Coaxial jack	.85
C3	462-24	1	Knob	.30
	390-1023	1	Label set	.40
C4	391-34	1	Blue and white label	.15
	597-260	1	Parts Order Form	
	597-308	1	Kit Builders Guide	
		1	Manual (See front cover for part number.)	2.00
			Solder (Additional 3' rolls of solder, #331-6, can be ordered for 25 cents each.)	

The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering from a Heathkit Electronic Center to cover local sales tax, postage, and handling. Outside the U.S.A., parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.

PARTS PICTORIAL



STEP-BY-STEP ASSEMBLY

Before you start to assemble this kit, read the "Kit Builders Guide" for complete information on soldering and step-by-step assembly procedures.

Position all parts as shown in the Pictorials. Follow the instructions carefully, and read the entire step before you perform the operation.

Solder a part or a group of parts only when instructed to do so.

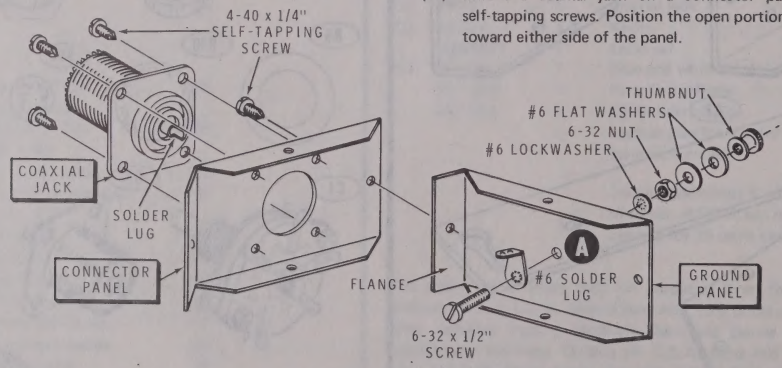
Refer to Pictorial 1 for the following steps.

( ) Install a 6-32 x 1/2" screw and a #6 solder lug through the ground panel as shown. Secure the screw with a #6 lockwasher and a 6-32 nut. Position the solder lug straight up toward the edge of the panel with the panel flange to the left.

( ) Place two #6 flat washers and a thumbnut on screw. Turn the thumbnut finger tight.

NOTE: When you use self-tapping screws in this kit, as in the following step, do not overtighten the screws. This can strip the threads in the metal parts.

( ) Mount a coaxial jack on a connector panel with four 4-40 x 1/4" self-tapping screws. Position the open portion of the connector solder post toward either side of the panel.



PICTORIAL 1

( ) In the same manner, mount the four remaining coaxial jacks onto four connector panels with 4-40 x 1/4" self-tapping screws.

( ) Add a small amount of solder to pre-tin each connector solder post.

Refer to Pictorial 2 for the following steps.

NOTE: In the following steps, you will fasten connector panels and the ground panel together. Be sure the flange end of each panel fits inside the panel to which it is attached. Tighten each screw as it is installed; then loosen it 1/4 turn. The screws will be tightened later.

( ) Connect the ground panel to one of the connector panels with a 4-40 x 1/4" self-tapping screw as shown in Pictorials 1 and 2.

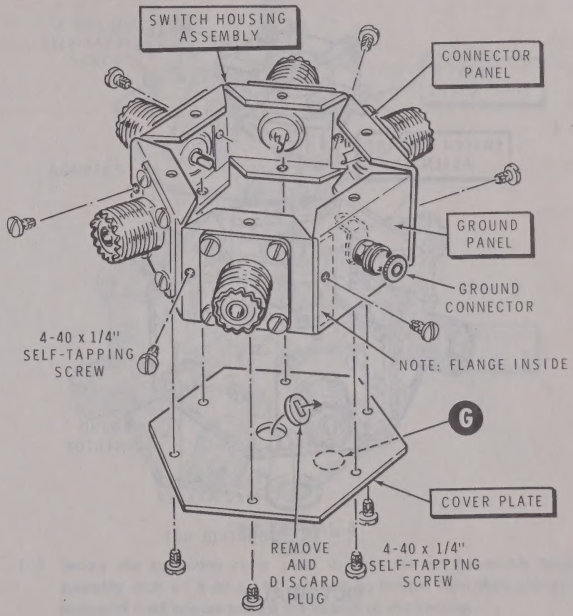
( ) Similarly, attach a connector panel to the other end of the ground panel with a 4-40 x 1/4" self-tapping screw.

( ) In the same manner, attach the remaining three connector panels to those previously assembled. Use four 4-40 x 1/4" self-tapping screws.

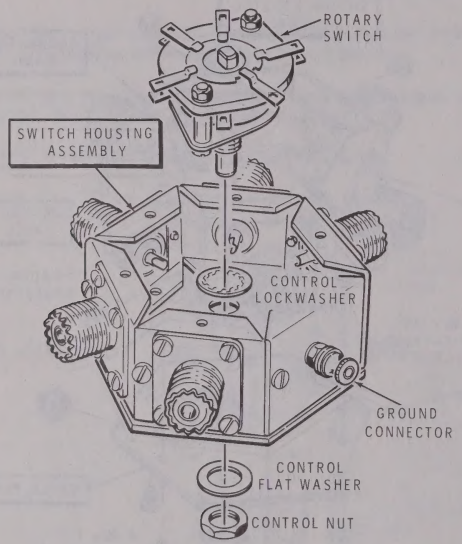
( ) Secure one of the cover plates to the connector and ground panels with six 4-40 x 1/4" self-tapping screws. Position the cover plate so the embossed lettering is visible on the outside and so the embossed G is adjacent to the ground connector as shown. Note the position of the solder lug.

( ) Tighten the six cover screws. Then tighten the six screws that connect the six connector and ground panels.

( ) Turn the assembly so the cover plate is up. Bend the plug out of the center of the cover plate with the blade of a screwdriver.



PICTORIAL 2



PICTORIAL 3

Refer to Detail 3A and to Pictorial 3 for the following steps.

NOTE: Carefully study the rear of the rotary switch as shown in Detail 3A. Note that there is one long contact lug on the switch wafer at B, and also there is a notch in the rotary center portion of the switch.

( ) Grasp the switch shaft with a pair of pliers and turn the switch rotor until the long contact lug and the rotor notch are positioned together as shown in the Detail. Do not turn the rotor again until the knob has been secured to the switch shaft.

( ) Carefully bend each of the lugs so it is flat and straight out from the surface.

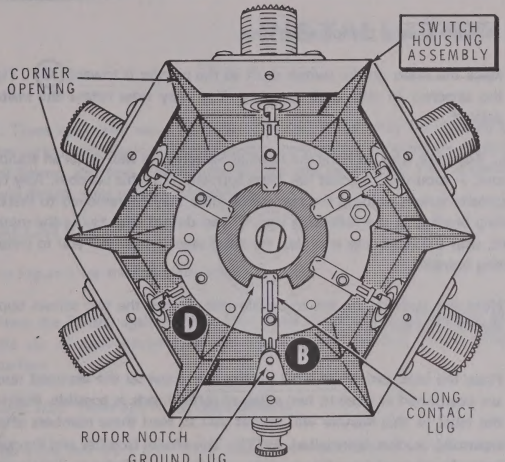
( ) Refer to the Pictorial and carefully insert the rotary switch into the switch housing assembly; the switch lugs will easily drop through the corner openings in the assembly. Rotate the switch and position the long contact lug near the ground lug inside the housing as shown.

( ) Place the control flat washer and the control nut on the switch shaft; do not tighten the nut.

( ) Reach inside the housing and turn the body of the switch until the long contact lug is directly under the ground lug as shown in Detail 3A. Note that one single lug on the front of the switch wafer will be under the connector center conductor at D. The remaining pairs of switch lugs will be in a position above and below each of the remaining four connector center conductors.

( ) Hold the switch firmly in this position and tighten the control nut.

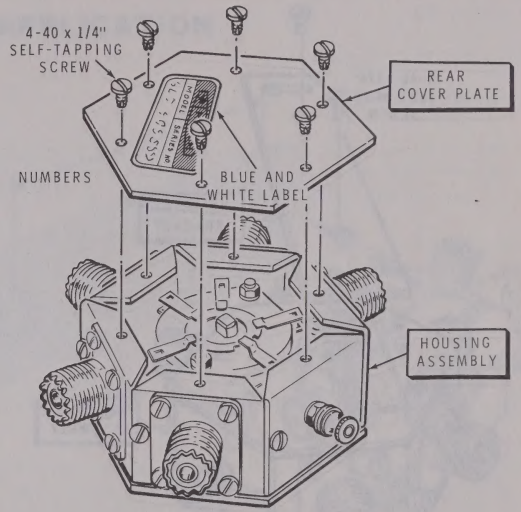
( ) Bend the ground lug downward with the blade of a screwdriver until it touches the long switch lug. Solder the two lugs together.



Detail 3A

( ) Bend the remaining rotary switch lugs until they all touch the center conductors of the coaxial jacks. Solder all five of the coaxial center conductors to their respective switch lugs. NOTE: Be sure that both the top and bottom switch lugs are securely soldered. Use enough solder to be sure the job is well done, but avoid an excess that will short the inner conductor and switch lugs to the housing assembly.

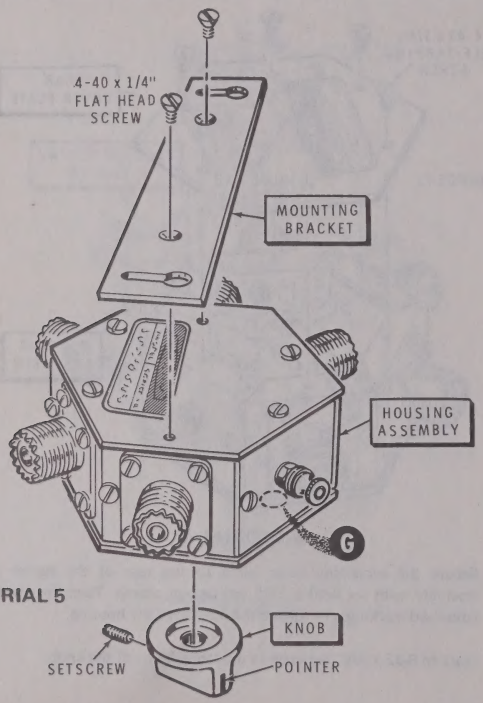
Refer to Pictorial 4 for the following steps.



PICTORIAL 4

( ) Secure the remaining cover plate to the rear of the switch housing assembly with six 4-40 x 1/4" self-tapping screws. Turn the cover so the embossed markings are toward the outside of the housing.

( ) Start an 8-32 x 3/8" setscrew in the tapped hole of the knob.



PICTORIAL 5

Refer to Pictorial 5 for the following steps.

( ) Place the knob on the switch shaft so the pointer is toward (G). Tighten the setscrew in the knob securely. You may now rotate the switch as desired.

NOTE: You may wish to hang the Coaxial Switch on a wall or on an equipment enclosure. A mounting bracket has been furnished for this purpose. Any two of the opposite screws holding the rear cover plate may be removed to install the mounting bracket in the following step. If you do not wish to use the mounting bracket, skip the next step and also the third step (which tell you to install the mounting bracket).

( ) Note the numbers on the top cover and remove the two screws opposite the "2" and the "C".

( ) Place the blue and white label on the rear cover so the stamped numbers are positioned as close to two adjacent screw heads as possible. Positioning the label in this manner will permit you to read these numbers after the mounting bracket is installed. NOTE: The Model Number and Production Series Number of your kit are shown on this label. Refer to these numbers in any communications you have with the Heath Company about this kit.

( ) Install the mounting bracket on the rear cover plate with two 4-40 x 1/4" flat head screws as shown in the Pictorial.

This completes the "Step-by-Step Assembly" of your Coaxial Switch. You will be instructed to apply the decals from your label set during the "Installation and Applications" section which follows.

INSTALLATION AND APPLICATION

NOTE: There are many ways that your Coaxial Switch may be installed and there are various applications for its use. One method for installing the Switch is outlined below, and two methods for its use will be covered. Your individual needs will dictate your specific application.

INSTALLATION

Refer to Figure 1 for the following steps.

( ) Place the Switch against the wall or panel where it is to be installed. Mark the tip of each keyhole slot in the mounting bracket on the selected surface.

( ) Drill 3/32" holes at the marked locations.

( ) Turn the two #6 x 5/8" sheet metal screws into the holes until only 1/8" of the shank is showing. Hang the mounting bracket onto the two screws; then tighten the screws securely.

( ) Loosen the thumbnut on the ground connection screw. Place the earth-ground lead between the two flat washers; then tighten the thumbnut securely.

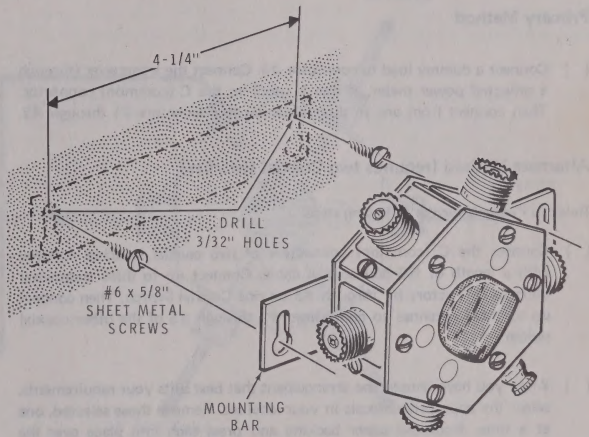


Figure 1

APPLICATIONS

Refer to Figure 2 for the following steps.

Primary Method

( ) Connect a dummy load to connector #4. Connect the transceiver (through a reflected power meter, if one is used) to the C (common) connector. Then connect from one to three antennas to connectors #1 through #3.

Alternate Method (requires two Coaxial switches)

Refer to Figure 3 for the following steps.

( ) Connect the C (common) connectors of two coaxial switches together with a length of RG-8/U coaxial cable. Connect up to three transceiver units to connectors #1 through #3 on one Coaxial Switch. Then connect up to three antennas to connectors #1 through #3 of the other coaxial switch.

( ) When you have chosen the arrangement that best suits your requirements, select the appropriate decals in your label set. Remove those selected, one at a time, from the paper backing and press each into place over the embossed circles on the front panel of the switch assembly. Position them so they are vertically aligned as you look at them. NOTE: This step may be omitted if desired.

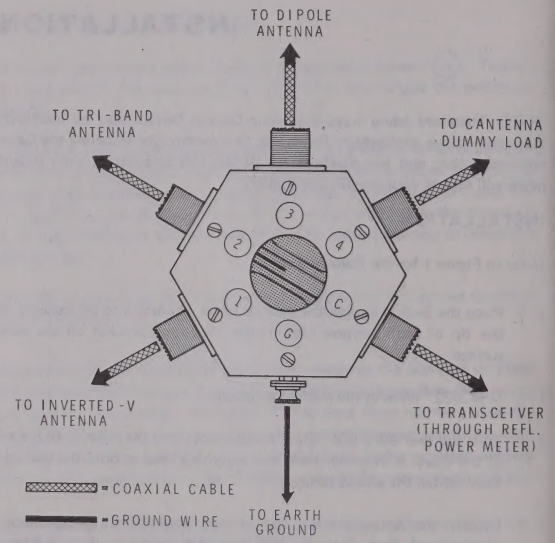


Figure 2

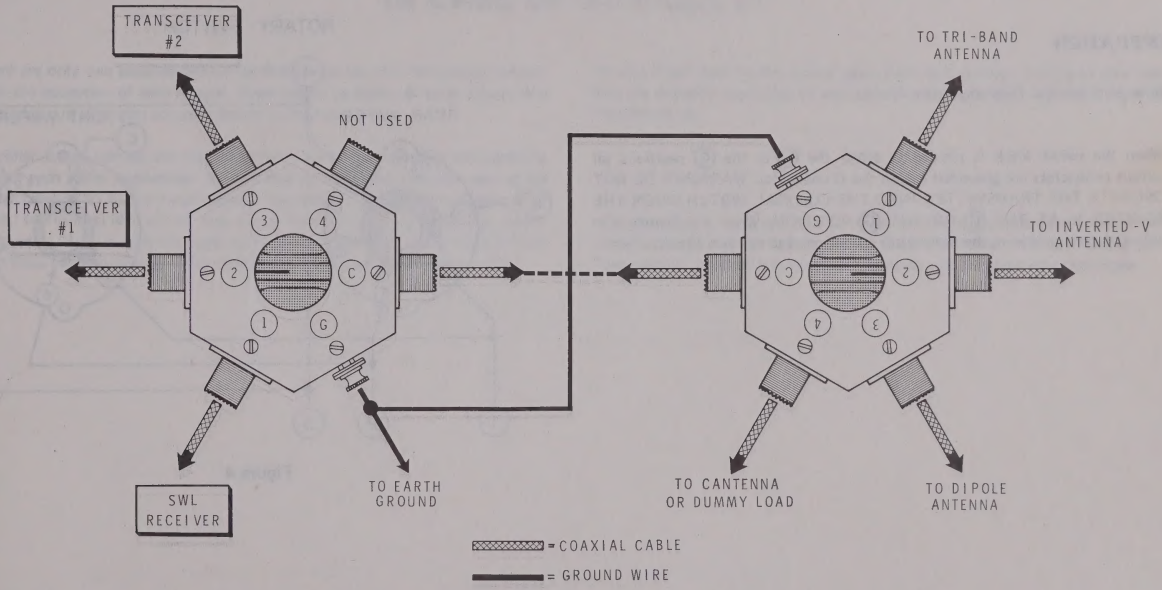

TRANSCEIVER #2
NOT USED
TRANSCEIVER #1
TO TRI-BAND ANTENNA
TO INVERTED-V ANTENNA
SWL RECEIVER
TO EARTH GROUND
TO CANTENNA OR DUMMY LOAD
TO DIPOLE ANTENNA
= COAXIAL CABLE
= GROUND WIRE

Figure 3

OPERATION

Refer to Schematic Diagram, Figure 4.

When the switch knob is rotated to either the Ⓒ or the Ⓖ positions, all output connectors are grounded except the C connector. WARNING: DO NOT OPERATE THE TRANSMITTER INTO THE COAXIAL SWITCH WHEN THE POINTER IS AT THE Ⓒ OR THE Ⓖ POSITION. When the Switch is in either of these positions, the transmitter is connected to an open circuit.

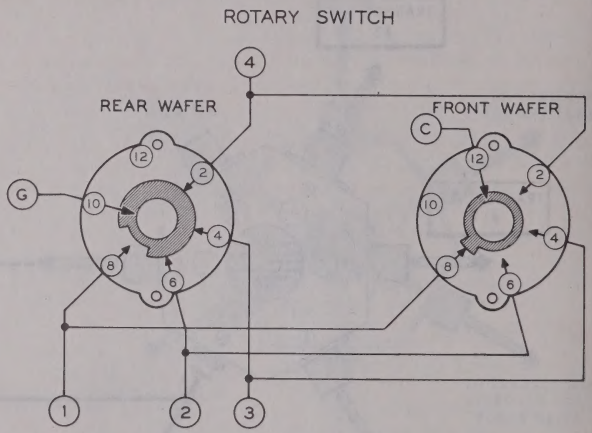


Figure 4

IN CASE OF DIFFICULTY

There are only two possible difficulties that can be found in the Coaxial Switch, with the exception of parts failure. These would be either an open circuit or a shorted circuit when the opposite should be the case.

In either event, remove the rear cover from the switch assembly and carefully inspect each solder connection. Be sure that no solder has run from any of the center conductors to the metal parts of the assembly. If a circuit is known to be open, try moving the switch lugs where they touch the coaxial jack center conductors. Be sure both the upper and lower switch lugs not only make contact with these center conductors, but that they are well soldered and immovable.

Finally, check each of the coaxial jacks with an ohmmeter and make sure that they are properly grounded, or are connected through from input to output as they should be.

It is suggested, if there still appears to be a problem, that you reheat each solder connection and melt a small additional amount of solder onto each connection. Then recheck the Switch for proper continuity with an ohmmeter once again.

SPECIFICATIONS

Standing Wave Ratio (to 250 MHz)	1.1:1 maximum.
Power Capability	1000 watts (2000 watts PEP) maximum.

The Heath Company reserves the right to discontinue instruments and to change specifications at any time without incurring any obligation to incorporate new features in instruments previously sold.

CUT ALONG DOTTED LINE

FOR PARTS REQUESTS ONLY

- Be sure to follow instructions carefully.
- Use a separate letter for all correspondence.
- Please allow 10 - 14 days for mail delivery time.

SEND TO:

HEATH COMPANY
BENTON HARBOR
MICHIGAN 49022
ATTN: PARTS REPLACEMENT

Phone (Replacement parts only):
616 982-3571

DO NOT WRITE IN THIS SPACE

INSTRUCTIONS

- Please print all information requested.
- Be sure you list the correct **HEATH** part number exactly as it appears in the parts list.
- If you wish to prepay your order, mail this card and your payment in an envelope. Be sure to include 10% (25¢ minimum, $3.50 maximum) for insurance, shipping and handling. Michigan residents add 4% tax.

Total enclosed $_____

- If you prefer COD shipment, check the COD box and mail this form. COD ☐

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

The information requested in the next two lines is not required when purchasing nonwarranty replacement parts, but it can help us provide you with better products in the future.

Model # _____ Invoice # _____

Date Purchased _____ Location Purchased _____

LIST **HEATH** PART NUMBER	QTY.	PRICE EACH	TOTAL PRICE
TOTAL FOR PARTS			
HANDLING AND SHIPPING			
MICHIGAN RESIDENTS ADD 4% TAX			
TOTAL AMOUNT OF ORDER			

THIS FORM IS FOR U.S. CUSTOMERS ONLY — OVERSEAS CUSTOMERS SEE YOUR DISTRIBUTOR

CUSTOMER SERVICE

REPLACEMENT PARTS

Please provide complete information when you request replacements from either the factory or Heath Electronic Centers. Be certain to include the **HEATH** part number exactly as it appears in the parts list.

Replacement parts are maintained specifically to repair Heath products. Parts sales for other reasons will be declined.

ORDERING FROM THE FACTORY

Print all of the information requested on the parts order form furnished with this product and mail it to Heath. For telephone orders (parts only) dial 616 982-3571. If you are unable to locate an order form, write us a letter or card including:

- Heath part number.
- Model number.
- Date of purchase.
- Location purchased or invoice number.
- Nature of the defect.
- Your payment or authorization for COD shipment of parts not covered by warranty.

Mail letters to: Heath Company
Benton Harbor
MI 49022
Attn: Parts Replacement

Retain original parts until you receive replacements. Parts that should be returned to the factory will be listed on your packing slip.

OBTAINING REPLACEMENTS FROM HEATH ELECTRONIC CENTERS

For your convenience, "over the counter" replacement parts are available from the Heath Electronic Centers listed in your catalog. Be sure to bring in the original part and purchase invoice when you request a warranty replacement from a Heath Electronic Center.

TECHNICAL CONSULTATION

Need help with your kit? — Self-Service? — Construction? — Operation? — Call or write for assistance. you'll find our Technical Consultants eager to help with just about any technical problem except "customizing" for unique applications.

The effectiveness of our consultation service depends on the information you furnish. Be sure to tell us:

- The Model number and Series number from the blue and white label.
- The date of purchase.
- An exact description of the difficulty.
- Everything you have done in attempting to correct the problem.

Also include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.

Please do not send parts for testing, unless this is specifically requested by our Consultants.

Hints: Telephone traffic is lightest at midweek — please be sure your Manual and notes are on hand when you call.

Heathkit Electronic Center facilities are also available for telephone or "walk-in" personal assistance.

REPAIR SERVICE

Service facilities are available, if they are needed, to repair your completed kit. (Kits that have been modified, soldered with paste flux or acid core solder, cannot be accepted for repair.)

If it is convenient, personally deliver your kit to a Heathkit Electronic Center. For warranty parts replacement, supply a copy of the invoice or sales slip.

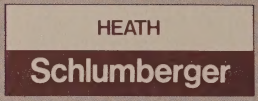
If you prefer to ship your kit to the factory, attach a letter containing the following information directly to the unit:

- Your name and address.
- Date of purchase and invoice number.
- Copies of all correspondence relevant to the service of the kit.
- A brief description of the difficulty.
- Authorization to return your kit COD for the service and shipping charges. (This will reduce the possibility of delay.)

Check the equipment to see that all screws and parts are secured. (Do not include any wooden cabinets or color television picture tubes, as these are easily damaged in shipment. Do not include the kit Manual.) Place the equipment in a strong carton with at least THREE INCHES of *resilient* packing material (shredded paper, excelsior, etc.) on all sides. Use additional packing material where there are protrusions (control sticks, large knobs, etc.). If the unit weighs over 15 lbs., place this carton in another one with 3/4" of packing material between the two.

Seal the carton with reinforced gummed tape, tie it with a strong cord, and mark it "Fragile" on at least two sides. Remember, the carrier will not accept liability for shipping damage if the unit is insufficiently packed. Ship by prepaid express, United Parcel Service, or insured Parcel Post to:

Heath Company
Service Department
Benton Harbor, Michigan 49022



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THE WORLD'S FINEST ELECTRONIC EQUIPMENT IN KIT FORM

LITHO IN U.S.A.